Snow Covered Area flood control background

Normally the system, local or calculated flood control refill curve criteria dictates the end of month flood control elevation. Starting in April of this year the level 1 snow covered area flood control constraint dictated operations during the REFILL period. The objective is to refill the project in a controlled manner and protect against a probable maximum flood (PMF). Below is the rule curve for this methodology:

Percent of Area Covered by By Accumulated Winter Snowpack	Space Reservation (1,000 AF)	Elevation (FT)
100	700	1558.2
80	540	1568.8
60	385	1578.4
40	230	1587.5
20	80	1595.8
10	0	1600

In November 1966 the Weather Bureau published HMR 43 ("Probable Maximum Precipitation, Northwest States"). The information in HMR 43 was not used in the determination of the Dworshak PMF because the study analysis had been done before HMR 43 was published. This left questions on the validity of the derived PMF. Rather than redoing all of the PMF computations and perhaps needing to redesign the Dworshak spillway, snow covered area criteria was developed to limit the filling rate of Dworshak to assure capability to pass the spillway design flood (220,000 cfs) in the event of a severe rainstorm during the spring snowmelt event. For the purposes of this analysis the snow covered area only includes winter snowpack and does not include late spring snowstorms which would cover a large area without producing substantial runoff.

The probable maximum flood (PMF) inflow for Dworshak was approved by the Office, Chief of Engineers, on 18 December 1968. The size of the Dworshak spillway was based on regulation of the PMF inflow of 411,000 cfs down to a 220,000 cfs release (outlet capacity of 40,000 cfs and spillway capacity of 180,000 cfs).

The snow covered area criteria is listed as a level 1 constraint and should not be violated except during extreme emergencies. This criteria and constraint level does however need to be need weighed against the ability of the snow covered area to produce substantial runoff .

These are the 2 web sites NWW uses to come up with snow covered area estimate. If NOAA is not able to get a satellite picture because of clouds, they run a model to estimate snow covered area percentage. The snow covered area estimates on this web

site change every day. Dworshak Reservoir is the basin used on the SCA site and Clearwater Basin is used on the snotel site.

REMOTE SENSING SCA WEB SITE

http://www.nohrsc.nws.gov/interactive/html/basin.php?rfc=NWRFC&dy=2004&dm=4&dd=28&dh=12&pe=sm_snow&units=0&submit1=Refresh+screen

SNOTEL UPDATE WEBSITE
ftp://ftp.wcc.nrcs.usda.gov/data/snow/update/id.txt

In addition to this, Walla Walla District made a helicopter snow flight on April 22 to verify the snow covered area percentage .